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REMARKS/ARGUMENTS

In the Claims, Claims 20-35, 50 and 58-60 are pending and remain in this application. Claims 20-35, 50 and 58-60 are rejected. Reconsideration is respectfully requested.

The Examiner rejected Claims 20-22, 25, 28, 31, 50, 58, and 60 under 35 U.S.C. 103(a) as being obvious in light of Goldberg et al. (US Pat. No. 6,203,989 B1) in view of Dusterhoft et al. (US Pat. No. 6,451,260 B1). The Examiner contended in part, that Goldberg et al. teach "incubating the nucleic acid material with the microarray of oligonucleotides on the *adsorbed polymer surface* ...". (emphasis is the undersigned's.) However, nowhere in USPN 6,203,989 B1, does Goldberg et al. teach or suggest that oligonucleotides are bound to an '*adsorbed polymer surface*'. Further, the Examiner admitted that Goldberg et al. do not teach a method wherein oligonucleotides are non-covalently bound to a polymer adsorbed on the surface of a siliceous substrate.

However, the Examiner further contended that Dusterhoft et al., when combined with Goldberg et al., teach a method of high temperature hybridization in a microarray of oligonucleotides, ... wherein oligonucleotides are non-covalently bound to a polymer adsorbed on the surface of a siliceous substrate". The Examiner supported the contention by citing col. 11, line 41 to col. 12, line 20 and col. 16, line 58 to col. 17, line 31 of USPN 6,451,260 B1 to Dusterhoft et al.

Moreover, the Examiner contended that it would have been *prima facie* obvious to one skilled in the art at the time the invention was made "to combine and substitute a method, wherein oligonucleotides are non-covalently bound to a polymer adsorbed on the surface of a siliceous substrate of Dusterhoft et al. in the nucleic acid hybridization buffer of Goldberg et al." In support of the contended combination, the Examiner cited col. 12, lines 16-20 of USPN 6,451,260 B1 (Dusterhoft et al.) and the last sentence of the Abstract of USPN 6,203,989 B1 to Goldberg et al.

Applicant respectfully traverses this rejection. Applicant respectfully makes clear herein that Goldberg et al. fail to disclose or suggest 'a polymer adsorbed on the surface of a siliceous substrate', 'adsorbed polymer surface' and 'oligonucleotides non-covalently bound to an adsorbed polymer surface'. Further, Applicant respectfully reminds the Examiner that in order to establish *prima facie* obviousness,

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the Examiner must meet three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest *all* the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir.1991). See MPEP, Section 2142, *ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS*.

Moreover as stated in MPEP 2143.01, "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

Contrary to the Examiner's contentions, there is no motivation to combine the teachings of Dusterhoft et al. and Goldberg et al. in the manner suggested by the Examiner. In particular, MPEP §2143.01 provides "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mill*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Dusterhoft et al. disclose "methods for producing microporous elements and microporous elements obtainable by such methods" useful for filtration and separation applications (see for example, the Abstract of USPN 6,451,260 B1 to Dusterhoft et al.). Moreover, Dusterhoft et al. specifically intend the disclosed microporous elements to be employed as "elements in microfiltration, chromatography, absorption/immobilization of organic and inorganic compounds as well as for the

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preparation and/or detection of such compounds" (see for example, the last sentence of the Dusterhoft et al. Abstract) through related filtration and separation methods. The particles fabricated using the teachings of Dusterhoft et al. would be useful to one skilled in the art as "column packing material" in a flow system. See the numerous references to "filter elements", "filter material" throughout the teachings of Dusterhoft et al. Further, in col. 1, line 24 to col. 2, line 17 of USPN 6,451,260 B1, Dusterhoft et al. set out the problems to be solved by the teachings of Dusterhoft et al., all of which are related to filtration and chromatography.

Dusterhoft et al. provide no teaching or suggestion that the aforementioned microporous elements are useful in, or may be used in conjunction with, anything other than various filtration and separation applications. In particular, Dusterhoft et al. do not suggest or teach an application of microporous elements in oligonucleotide hybridization or binding assays.

Goldberg et al. teach methods and compounds for detecting target molecules in a sample using specific binding assays. In particular, Goldberg et al. disclose, "hybridizing a nucleic acid probe, comprising a target nucleic acid sequence, to a nucleic acid probe comprising a nucleic acid sequence, wherein the target comprises a binding ligand" (see for example, the Abstract of USPN 6,203,989 B1 to Goldberg et al.). Goldberg et al. do not suggest or teach filtration, except filtering of a buffer through a 2 mm filter prior to its use, and never mention or suggest chromatography or related methods. Specifically, Goldberg et al. do not teach or suggest employing microporous elements for filtering or chromatography. In short, Goldberg et al. teach hybridizing targets to detect target molecules in a sample while Dusterhoft et al. teach filtering or separating organic and inorganic compounds using disclosed microporous elements.

As such, there is nothing in the references that motivates one skilled in the art to combine the teachings and "substitute a method, where oligonucleotides are non-covalently bound to a polymer adsorbed on the surface of a siliceous substrate of Dusterhoft et al. in the nucleic acid hybridization buffer of Goldberg et al.", as contended by the Examiner. Moreover, there is nothing in the references that motivates one skilled in the art to make such a combination or substitution for any purpose related to filtration, chromatography, or a binding assay. To contend

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otherwise, is inappropriately using Applicant's disclosure (i.e., hindsight) in an attempt to show obviousness.

Further, the Examiner's contention that statements by Dusterhoft et al. (col. 12, lines 16-20 of USPN 6,451,260 B1) and by Goldberg et al. (USPN 6,203,989 B1 Abstract, last sentence) support a motivation to combine is also incorrect. At col. 12, lines 16-20, Dusterhoft et al. are simply describing a desirable characteristic of the final microparticle-containing filter element and not disclosing any motivation for using such a microparticle-containing filter element in anything other than a filtering or separation (e.g., chromatography) application. As such, it would be inappropriate for the Examiner to take statements made by a reference out of context and not consider the teachings of the reference as a whole. The court has held that "[i]t is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to depreciate the claimed invention." *In re Fritch*, 972 F. 2d. 1260, 23 USPQ 2d 1780, 1784 (Fed. Cir. 1992) quoting *In re Fine*, 837 F. 2d. 1071, 1075, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988). Likewise, in the last sentence of the Abstract of USPN 6,203,989 B1, Goldberg et al. are merely allowing that an array of different nucleic acid probes may be used for screening and detection of binding of a large number of nucleic acids.

As a result, there is no motivation to combine the binding assay method of Goldberg et al. with filtering or chromatography elements of Dusterhoft et al. Not only are these statements of Dusterhoft et al. and Goldberg et al. simply uncorrelated and unrelated, but the statements also do not represent that actually taught by the references as a whole. One skilled in the art would not be motivated to combine the teachings of Dusterhoft et al. with Goldberg et al. to achieve the Examiner's contended combination either based on the statements relied upon by the Examiner or the teachings of the references as a whole. Thus, the Examiner's contentions are incorrect with respect to a motivation to combine the teachings of Goldberg et al. and Dusterhoft et al.

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Also contrary to the Examiner's contentions, there is no reasonable expectation of success in such a combination suggested by the Examiner, and further, such a combination would effectively destroy the intended function of the teachings of Dusterhoft et al.

In particular, Dusterhoft et al. specifically provides for using the disclosed microporous elements in filtering and chromatography applications as discussed hereinabove. Implicit in such filtering and chromatography applications is a general movement of a solvent containing compounds being separated through a matrix of the microporous elements. Therefore, assuming *arguendo* that the microporous elements of Dusterhoft et al. were used in the hybridization assay of Goldberg et al., then the operation of the hybridization assay would destroy the intended function of the microporous elements as taught by Dusterhoft et al. In the teachings of Dusterhoft et al., filtration and chromatography provide for a solvent that contains compounds to be separated or filtered to move through the matrix of the microporous elements. However according to the teachings of Goldberg et al., hybridization involves holding a hybridization solution in contact with a substrate surface having immobilized nucleic acid probes thereon for an extended period (see for example, col. 14, lines 26-28 of USPN 6,203,989 B1). Therefore, the hybridization method teachings by Goldberg et al. are contrary to filtering or separating compounds by passing them through or across microporous elements in filtration or chromatography applications according to Dusterhoft et al. MPEP 2145 X.D2 provides specifically that "It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 f.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)".

As a result, one skilled in the art would have no expectation that using the microporous elements in the method of Dusterhoft et al. with the hybridization buffer in the method of Goldberg et al. would be successful, at least because the operation, purpose and/or use of each as taught by the references contradict and teach away from each other.

Applicant respectfully submits that the Examiner has failed to establish *prima facie* obviousness with respect to Claims 20-22, 25, 28, 31, 50 58, and 60. Specifically, the Examiner has failed to establish *some suggestion or motivation*,

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either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings and has not demonstrated a reasonable expectation of success for such a combination. Such a combination suggested by the Examiner would destroy the respective intended purposes of that disclosed by the references.

As such, Applicant respectfully submits that having failed to establish *prima facie* obviousness for at least the reasons set forth above, the rejection of Claims 20-22, 25, 28, 31, 50 58, and 60 under U.S.C. 103(a) with respect to Goldberg et al. in view of Dusterhoft et al. is unsupported and, therefore must be withdrawn.

The Examiner rejected Claim 23, 24, and 32-35 under 35 U.S.C. 103(a) over Goldberg et al. in view of Dusterhoft et al. (both cited above) further in view of Reynolds et al. (US Pat. No. 6,316,608 B1). Claims 23, 24, and 32-35 ultimately depend from and include all of the limitations of base Claim 20. Applicant respectfully traverses this rejection for the reasons set forth below.

The Examiner further rejected Claim 26-27 under 35 U.S.C. 103(a) over Goldberg et al. in view of Dusterhoft et al. (both cited above) further in view of Cohen et al. (US Pat. No. 6,322,989 B1). Claims 26-27 ultimately depend from and include all of the limitations of base Claim 20. Applicant respectfully traverses this rejection also for the reasons set forth below.

The Examiner still further rejected Claim 29-30 under 35 U.S.C. 103(a) over Goldberg et al. in view of Dusterhoft et al. further in view of Cohen et al. (each cited above) further in view of McDonough et al. (US Pat. No. 6,252,059 B1). Claims 29-30 ultimately depend from and include all of the limitations of base Claim 20. Applicant respectfully traverses this rejection for the reasons set forth below also.

Finally, the Examiner rejected Claim 59 under 35 U.S.C. 103(a) over Goldberg et al. in view of Dusterhoft et al. (both cited above) further in view of Milliman et al. (US Pat. No. 6,495,327 B1). Claim 59 ultimately depends from and includes all of the limitations of base Claim 50. Applicant also respectfully traverses this rejection as set forth below.

Applicant respectfully reminds the Examiner that if an independent base claim is non-obvious under 35 U.S.C. 103, any claim depending therefrom is likewise non-obvious. *In re Fine*, 837, F.2d, 1071, 5 USPQ 2d, 1596 (Fed. Cir. 1988). For the

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reasons set forth above, it is respectfully submitted that the Examiner has failed to establish *prima facie* obviousness under 35 U.S.C. 103 of base Claims 20 and 50. As such, the Examiner has similarly failed to establish *prima facie* obviousness with respect to dependent Claims 23-24 and 32-35, Claims 26-27, Claims 29-30 and Claim 50, as rejected. *In re Fine*, cited *supra*. Thus, the rejections under 35 U.S.C. 103(a) of Claims 23-24, 26-27, 29-30, and 32-35 and 50 are improper and must be withdrawn.

In summary, Claims 20-35, 50 and 58-60 are pending. Claims 20-35, 50 and 58-60 were rejected. As detailed above, Claims 20-35, 50 and 58-60 are in condition for allowance. It is respectfully requested that Claims 20-35, 50 and 58-60 be allowed, and that the application be passed to issue at an early date.

Should the Examiner have any questions regarding the above, please contact Gordon M. Stewart, Attorney for Applicant, Registration No. 30,528 at Agilent Technologies, Inc., telephone number (650) 485-2386 or the undersigned at telephone number (775) 849-3085.

Respectfully submitted,
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CERTIFICATE OF TRANSMISSION

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Elizabeth E. Leitereg 12-15-03
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